
Four New Species of *Memora* (Bignoniaceae) from South America¹

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ABSTRACT. Four new South American species of *Memora* (*M. cidii*, *M. contracta*, *M. sastrei*, and *M. velutina*) are described and three are illustrated. *Memora cidii* has flattened inflorescence axes, campanulate calyces, and bracteoles extending beyond the calyx tip. Glands at the base of the corolla lobes distinguish *M. contracta*, and *M. sastrei* is unique in having conspicuous yellow-dendroid pubescence on its inflorescence axes and calyces. *Memora velutina* is distinguished by pilose pubescence throughout. Relationships of these species to other *Memora* species are discussed.

Memora Miers (Bignoniaceae) is a genus of 32 species of lianas, scandent shrubs, or treelets found in tropical South America east of the Andes (Gentry, 1977, 1982, 1997). *Memora* is distinguished from other genera of tribe Bignonieae by the combination of terete branchlets and pinnately or bipinnately compound leaves (Gentry, 1978). *Memora* species produce showy, yellow to red, tubular-funnel-form corollas, linear-oblong to oblong-orbicular dehiscent capsules, and bialate to corky seeds (Gentry, 1977, 1997). Gentry and Tomb (1980) suggested that *Adenocalymna*, *Memora*, and two species of *Tanaecium* may compose a "basically natural group" because most of these species share medium-textured yellow corollas, simple tendrils, and primarily biseriate ovules.

During preparation of a review of *Memora*, specimens annotated by A. H. Gentry were discovered that were neither described fully nor published validly. Although Gentry did not publish them before his untimely death, these taxa represent evolutionary units suitable for recognition as species. In a draft of his *Flora de Colombia* treatment of Bignoniaceae, Gentry described *Memora sastrei* but did not provide a Latin description or diagnosis. The other three *Memora* species presented here, *M. cidii*, *M. contracta*, and *M. velutina*, had no written descriptions and few notes pertaining to their circumscription.

- 1. *Memora cidii*** A. H. Gentry ex Hawk, sp. nov.
TYPE: Brazil. Amazonas: Mun. of Novo Aripuana, BR 230, Rod. Transamazonica, 400 km from Humaitá, 07°15'S, 60°00'W, 4 May 1985, C. Ferreira 6013 (holotype, MO!; isotypes, NY!, US!). Figure 1.

Frutex scandens, ramulis teretibus glabris sine consociis glandularibus in nodis interpetiolaribus. Folia opposita imparipinnata compositis foliolis 1–3 jugatis ovatis-ellipticis obtusis; pseudostipulis inconspicuis glandulosis. Inflorescentia paniculata axillaris; bracteolis cupulatis. Flos calyce truncato campanulato extus glanduloso apice puberulo duabus bracteolis subtentus; corolla tubuloso-infundibuliformi tubo glabro; thecis antherarum divaricatis; ovario oblongo lepidoto; disco pulvinato. A speciebus aliis rhachidibus et pedunculis complanatis olivaceis, inflorescentiae bracteolis triangularibus caducis differt.

Lianas; branches drying tan to brown, not striate, glabrate, the surface rough, with interpetiolar glandular fields lacking and interpetiolar transverse ridge inconspicuous or absent, lenticels not evident; pseudostipules persistent, subfoliaceous, ovate-oblong, 4–5 × 2–3 mm, glandular, glabrate. *Leaves* opposite, estipulate, petiolate, 50–55 cm long, 2–3-pinnate with a pair of opposite pinnae and the terminal pinna often modified into a tendril, each pinna imparipinnate with 1–3 sets of opposite simple or compound pinnules, the terminal segment somewhat larger than the lateral segments; petioles 4–6 cm long, terete, glabrate; petiolules 1–3 cm long, inconspicuously sulcate, glabrate; ultimate segments entire, ovate to ovate-elliptic, 16–22 × 7–11 cm, equilateral, plane, chartaceous, glabrate, apically obtuse, basally oblique to broadly acuminate, the venation brochidodromous with 8–10 principal vein pairs, marginally plane; joints of the compound leaf conspicuously enlarged. *Inflorescences* elongate, axillary racemes to 15 cm long, branched, several- to many-flowered; rachis and peduncles flattened, glabrate, and bracteate, the bracts triangular, 4–6 × 1–2 mm, caducous, minutely glandular, glabrate with ciliate margins; pedicels 1–2 mm long, glabrate; bracteoles ovate-ellip-

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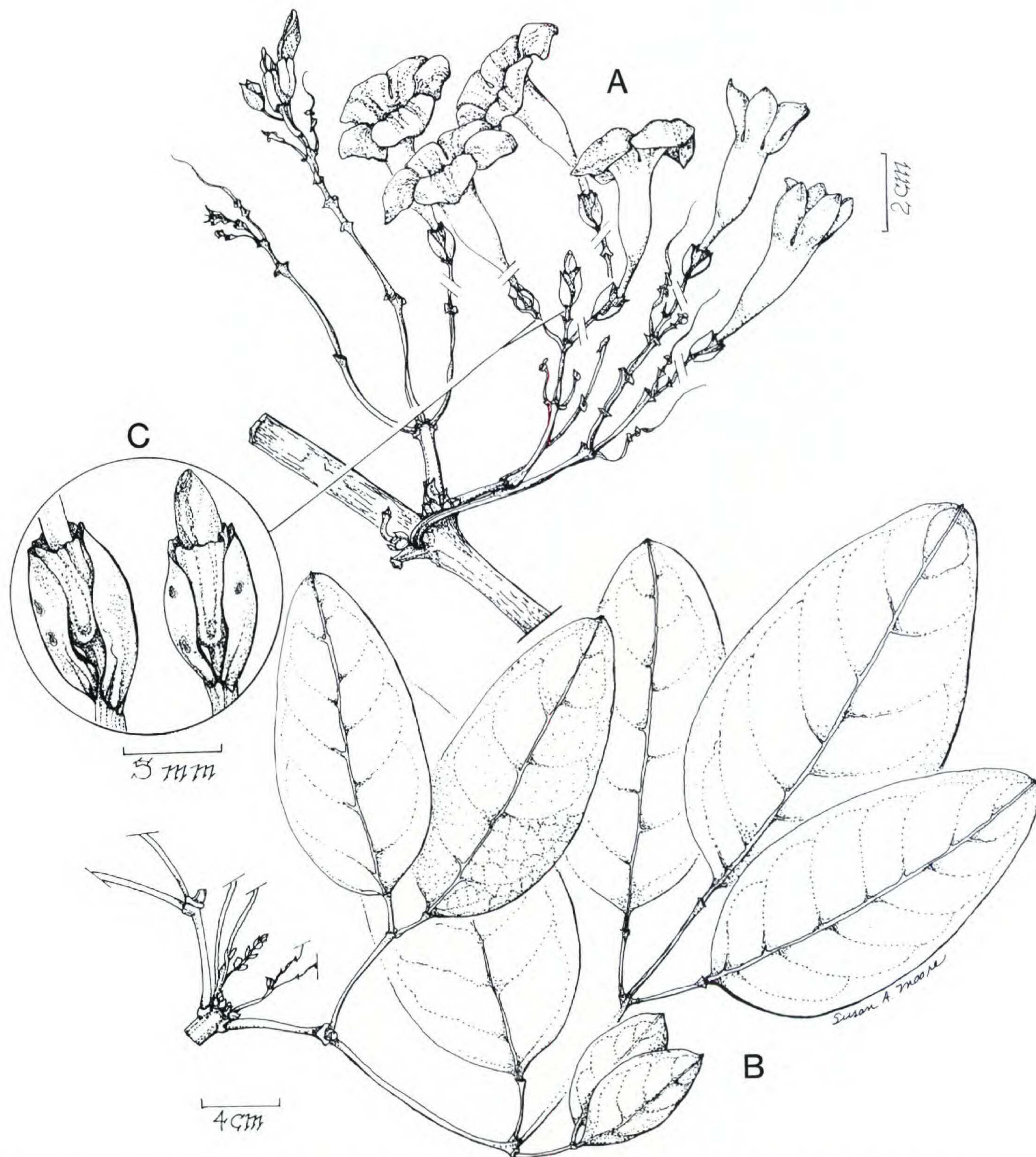


Figure 1. *Memora cidii* A. H. Gentry ex Hauk. —A. Inflorescence and stem. —B. Leaf. —C. Calyx with two subtending bracteoles. (From C. Ferreira 6013, MO, NY, US.)

tic and cupular, 8–11 × 4–5 mm, glandular, glabrate with ciliate margins, extending beyond the calyx tip. *Flowers* ovoid in bud; calyx campanulate, 5–8 × 5–6 mm, eglandular, costate, the outer calyx surface glabrate, the inner surface gland-tipped pubescent, the margin ciliate and intact, apically truncate except for 5 minute teeth; corolla zygomorphic, tubular-funnelform, yellow, exerted ca. 45 mm beyond the level of the calyx lip (50–55 mm total length), 2–3 mm wide at the calyx mouth, with an inner ring of flattened gland-tipped pubes-

cence 8–10 mm from the corolla tube base, otherwise glabrate; corolla lobes 5 (2 upper and 3 lower), short-orbicular, 12 × 12 mm, the inner surface glandular-lepidote, the outer surface glabrate, no glandular fields present at the base of each lobe; fertile stamens didynamous, ca. 15 or 25 mm long, inserted near the level of the calyx lip, the single staminode inserted near the level of the fertile stamens; fertile anthers with two spreading thecae, included, glabrous; disc present, 1 mm tall; ovary 5 mm long, cylindrical, glabrate to minutely lepidote;

style 25 mm long; stigma bipartite and included. *Fruit* unknown.

Distribution. Known only from Amazonas, Brazil. Elevation unknown. Collected in terra firme soil.

Phenology. The sole collection was in flower in May.

Memora cidii is known only from the type collection. An unusual character of *M. cidii* is that the inflorescence axes are flattened, as is found (to a lesser extent) in *M. bracteosa* (DC.) Bureau & K. Schumann, *M. mollis* A. H. Gentry, and *M. racemosa* A. H. Gentry. *Memora cidii* has a more highly branched inflorescence than do *M. bracteosa* and *M. racemosa*. *Memora cidii*, *M. mollis*, and *M. racemosa* share campanulate, ribbed calyces, but *M. cidii* differs from *M. racemosa* and *M. mollis* in having bracteoles that extend beyond the calyx. *Memora cidii* has much smaller bracteoles than *M. bracteosa*. The inflorescence bracts of *M. cidii* and *M. racemosa* are generally caducous, whereas those of *M. bracteosa* and *M. mollis* are persistent. Further insights into the affinities of *M. cidii* await study of fruit, seed, and pollen characters.

2. *Memora contracta* A. H. Gentry ex Hauk, sp. nov. TYPE: Brazil. Rondônia: Município de Ariquemes, Minerarção Mibrasa, Setor Alto Candeias, km 128, 16 May 1982, L. O. A. Teixeira et al. 502 (holotype, MO). Figure 2.

Frutex scandens, ramulis teretibus glabris sine consociis glandularibus in nodis interpetiolaribus. Folia opposita imparipinnata foliolis 1–2 jugatis ellipticis acutis; pseudostipulis foliaceis ellipticis glandulosis. Inflorescentia racemosa-paniculata axillaris; bracteolis cupulatis. Flos calyce subspathaceo extus glanduloso puberulo duabus bracteis puberulis subtentus; corolla tubuloso-infundibuliformi tubo glabro; thecis antherarum divaricatis; ovario oblongo lepidoto; disco pulvinato. A speciebus aliis lobulis corollinis glandulis elevatis subtentis, pseudostipulis foliaceis ellipticis differt.

Lianas; branches brown to gray, not striate, glabrate to uncinata, with interpetiolar glandular fields lacking and interpetiolar transverse ridge present, lenticels evident; pseudostipules persistent, foliaceous, ovate-elliptic, 1–3 × 0.3–1.5 cm, glandular, glabrate to uncinata-puberulent, with prominent veins converging at the base. *Leaves* opposite, estipulate, petiolate, 27–50 cm long, imparipinnate with 2–4 pairs of opposite pinnae, tendrils not observed; petioles 4–8 cm long, terete to slightly sulcate, minutely uncinata-puberulent; petiolules 0.3–2.0 cm long, sulcate, uncinata-puberulent; ultimate segments entire, 14–22 × 3.5–10 cm, mostly elliptic to ovate, equilateral, plane, chartaceous, unci-

nate-puberulent, apically acuminate to acute-acuminate, basally acute to acuminate, the venation brochidodromous with 5–7 principal vein pairs, marginally slightly undulate; joints of the compound leaf conspicuously enlarged. *Inflorescences* compact, axillary racemes to 10 cm long, unbranched, several-flowered; rachis and peduncles terete, minutely puberulent and bracteate, the bracts linear-elliptic, 5–10 × 1–3 mm, glandular, glabrate to minutely puberulent; pedicels 1–3 mm long, minutely puberulent; bracteoles elliptic, 5–12 × 4–6 mm, glandular, minutely puberulent, extending $\frac{1}{4}$ – $\frac{3}{4}$ the length of the calyx. *Flowers* ovoid in bud; calyx bilabiate-subspathaceous, 14–18 × 5–6 mm, glandular, ecostate, the outer calyx surface glabrate to minutely puberulent, the inner surface glabrate, the margin splitting irregularly $\frac{1}{4}$ – $\frac{1}{3}$ the length of the tube, the valves apically acute with 5 minute teeth; corolla zygomorphic, tubular-funnelform, yellow, exerted ca. 55–60 mm beyond the level of the calyx lip (65 mm total length), 3–5 mm wide at the calyx mouth, with an inner ring of pilose pubescence 10–20 mm from the corolla tube base; corolla lobes 5 (2 upper and 3 lower), irregularly orbicular, 15 × 15 mm, the inner surface lepidote-glandular, the outer surface glabrate, raised glandular fields at the base of each lobe; fertile stamens didynamous, 15 or 22 mm long, inserted 10 mm beyond the level of the calyx tip, the single staminode ca. 5 mm long, inserted at the same level as the fertile stamens; fertile anthers with two spreading thecae, included, glabrous; disc 1 mm tall; ovary 4 mm long, cylindrical, sparsely lepidote; style ca. 40 mm long; stigma bipartite and included. *Fruit* linear-oblong, 9–20 × 2.5–3.0 cm, the valves flattened but not conspicuously thickened, ≤ 4 mm thick, the margins not obviously serially constricted, drying dark brown, the midline evident but inconspicuous, the surface smooth to verrucate, many-seeded; seeds flattened, 2.5–3.0 × 2.0 cm, 2–4 mm thick, irregularly quadrate, wingless, the body not distinct.

Distribution. Known from Brazil and Venezuela. The Brazilian collections were made at 650 m, in terra firme forests.

Phenology. Ten fertile collections of *M. contracta* are known. Single flowering collections are from May, August, and September, and two collections each are from October and November. All three fruiting collections are from November.

Three of the collections examined were identified initially as *M. schomburgkii*, to which *M. contracta* is closely related. However, the presence of glandular fields at the base of the corolla lobes in

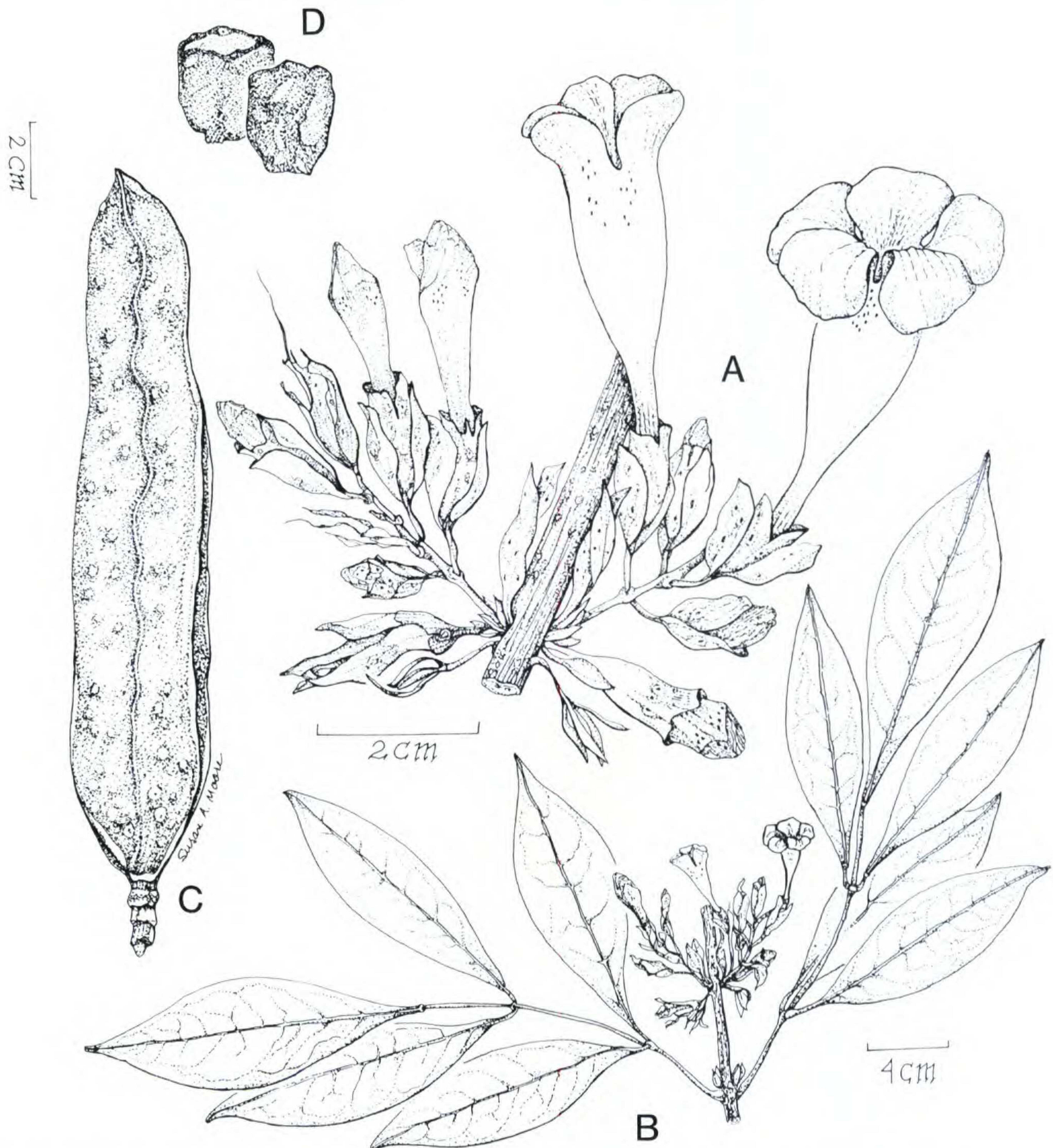


Figure 2. *Memora contracta* A. H. Gentry ex Hauk. —A. Inflorescence and stem. —B. Leaves and inflorescence. —C. Fruit. —D. Seed, proximal and distal sides. (A, B from Vieira et al. 469, MO; C, D from dos Santos et al. 169, MO.)

M. contracta clearly differentiates the two species (Fig. 2). As in *M. schomburgkii*, the calyx of *M. contracta* (Fig. 2) is bilabiate to subspathaceous, but it is generally smaller than that of *M. schomburgkii*. The fruits of *M. schomburgkii* are longer than those of *M. contracta*, and its seeds thicker. The pseudostipules of *M. contracta* are unique in *Memora* for their size, elliptic shape, and conspicuous venation. Vegetatively, *M. contracta* resembles *M. aspericarpa* A. H. Gentry, but the latter has less conspicuous bracts and bracteoles, and thicker fruit and seeds.

Paratypes. VENEZUELA. **Bolívar:** Dto. Sifontes, 16–17 Sep. 1989, *M. Colella et al.* 1447 (NY, MO!). BRAZIL. **Amazonas:** Manaus–Pôrto-Velho highway, km 124, 25 Mar. 1974, *D. G. Campbell et al.* P20910 (MO!); Rio Tarumã, 26 Nov. 1974, *A. Gentry & J. Ramos* 12864 (MO); Mineração, Campo Novo, 16 Oct. 1979, *C. Vieira et al.* 469 (MO!). **Pará:** 18 km from Tucuruí, 1 Nov. 1981, *D. C. Daly et al.* 1171 (MO!); Parauapebas, Reserva Biológica da Serra dos Carajás, 20 Nov. 1991, *G. dos Santos et al.* 169 (MO!); Parauapebas, Reserva Biológica da Serra dos Carajás, 21 Nov. 1991, *G. dos Santos et al.* 191 (MO!), 192 (MO!), 193 (MO!). **Rondônia:** Pôrto Velho–Cuiabá highway, 10 km S of Ariquemes, 14 Aug. 1968, *E. Forero & B. L. Wrigley* 7057 (INPA, MG,

MO!); Mineração Taboca at Massangana, 11 Oct. 1979, J. L. Zarucchi et al. 2674 (JBSD, MO!).

3. *Memora sastrei* A. H. Gentry & Hauk, sp. nov. TYPE: Colombia. Amazonas: Río Igará-Paraná, La Chorrera, reste de forêt primaire, 22 Sep. 1973, *Sastre* 2293 (holotype, COL; isotypes, MO, P).

Frutex scandens, ramulis teretibus glabris sine consociis glandularibus in nodis interpetiolaribus. Folia opposita, pinnata foliolis 3–5 ellipticis vel elliptico-ovatis scabre pubescentia; pseudostipulis carentibus. Inflorescentia racemosa compacta axillaris dense pubescentia dendroideis flavidis; bracteolis deciduis. Flos calyce tubuloso-campanulato irregulariter bilabiato apice glanduloso dense pubescente trichomatibus dendroideis flavidis duabus bracteolis glandulosis sicut calyce inflorescentiaque pubescentibus subtentus; corolla tubuloso-infundibuliformi. A speciebus aliis pubescentia dendroidea flavida, calyce apice glanduloso differt.

Arbolito 5–8 m de alto, las ramitas subteretes o un poco angulosas, sin pseudoestípulas. *Hojas* pinnadas con 3–5 folíolos elípticos a elíptico-ovados, subagudos a subtruncados en la base (ápice desconocido), 13–30 cm de largo, 6–14 de ancho, coriáceos, bulados, las nervaduras primarias, secundarias, y terciarias conspicuamente impresas por encima y prominente por debajo; glabras en la haz, escabro no-pubescente en el envés, apareciendo blanquecino por la densa pubescencia, con tricomas largos, simples y ramificados, y tricomas cortos, dendroides. *Inflorescencia* en racimo corto, axilar, densamente pubescente con tricomas dendroides canela-amarillentos, las flores subtendidas por bractéolas 5–7 mm de largo, tempranamente deciduas. Cáliz tubular-campanulado, 20–26 mm de largo, 8–15 de ancho, irregularmente bilabiado, densamente pubescente con tricomas dendroides de color canela y glándulas con forma de plato cerca del ápice; corola amarilla, tubular-infundibuliforme o tubular-campanulada, 8–11 cm de largo, 15–25 mm de ancho en la boca del tubo, los lobos casi 2 cm de largo. *Cápsula* desconocida.

Esta especie está muy emparentada con *M. cladotricha*, pero difiere notablemente por la pubescencia mucho más gruesa, especialmente en el cáliz y la superficie inferior de las hojas, las bractéolas más pequeñas y los folíolos más bulados. *Memora cladotricha* puede tener el nervio medio y los secundarios impresos por la haz y prominente por el envés, pero la venación más fina es uniformemente prominente por debajo y prominente a subplana por encima. El tipo de *M. cladotricha* es más pubescente que la mayoría de los otros ejemplares del taxón y, por ende, intermedio entre *M. sastrei* y la

mayoría de las colecciones ubicadas en *M. cladotricha*.

The description and discussion of *Memora sastrei* provided here were originally written in English by A. H. Gentry, and then translated into Spanish. Unfortunately, the original English description could not be located. Gentry visited COL and P during the period that he wrote the *Flora de Colombia* treatment, and he annotated the holotype and presumably examined all the isotypes. The duplicates at MO are only fragmentary and could not be the basis for the description presented here. Gentry did not provide a Latin description or diagnosis of *M. sastrei* in the *Flora de Colombia* manuscript; the Latin description was provided by the author.

Paratypes. COLOMBIA. Amazonas: Río Igará-Paraná, La Chorrera, layon conduisant à la Sabana, km 1, 18 Sep. 1973, *Sastre* 2246 (MO, P).

4. *Memora velutina* A. H. Gentry ex Hauk, sp. nov. TYPE: Brazil. Pará: BR 230, Transamazonian highway, 188 km W of Altamira, 30 Nov. 1977, G. T. Prance, A. S. Silva, M. J. Balick, A. J. Henderson, B. W. Nelson & R. P. Bahia P25891 (holotype, MO; isotypes, NY, US). Figure 3.

Frutex scandens, ramulis teretibus dense pilosis sine consociis glandularibus in nodis interpetiolaribus. Folia opposita bipinnata foliolis ovato-ellipticis obtusis; pseudostipulis foliaceis orbiculato-cordatis sparsim pilosis glandulosis. Inflorescentia racemosa pendula axillaris; bracteolis cupulatis. Flos calyce campanulato apice truncato minute 5-denticulato extus glanduloso duabus bracteolis foliaceis glandulosis subtentus; corolla tubuloso-infundibuliformi tubo glabro; thecis antherarum divaricatis; ovario oblongo lepidoto; disco pulvinato. A speciebus aliis ramulis dense pilosis differt.

Lianas; branches drying yellowish green, not striate, conspicuously pilose, with interpetiolar glandular fields lacking and interpetiolar transverse ridge present, lenticels inconspicuous or absent; pseudostipules persistent, foliaceous to subfoliaceous, elliptic to cordate-orbicular, 4–20 × 3–20 mm, glandular, sparsely pilose with ciliate margins. *Leaves* opposite, estipulate, petiolate, 8–17 cm long, bipinnate with a pair of opposite pinnae and the terminal pinna modified into a simple tendril, each pinna imparipinnate with 1–2 sets of opposite simple ultimate segments; petioles 2.5–3.0 cm long, inconspicuously sulcate, pilose; petiolules 3–7 mm long, inconspicuously sulcate, pilose; ultimate segments entire, 4–9 × 1.5–4.5 cm, elliptic to ovate, equilateral, plane, chartaceous, glabrate above except short-pilose along the midrib and proximal portions of the secondary veins, pilose beneath,

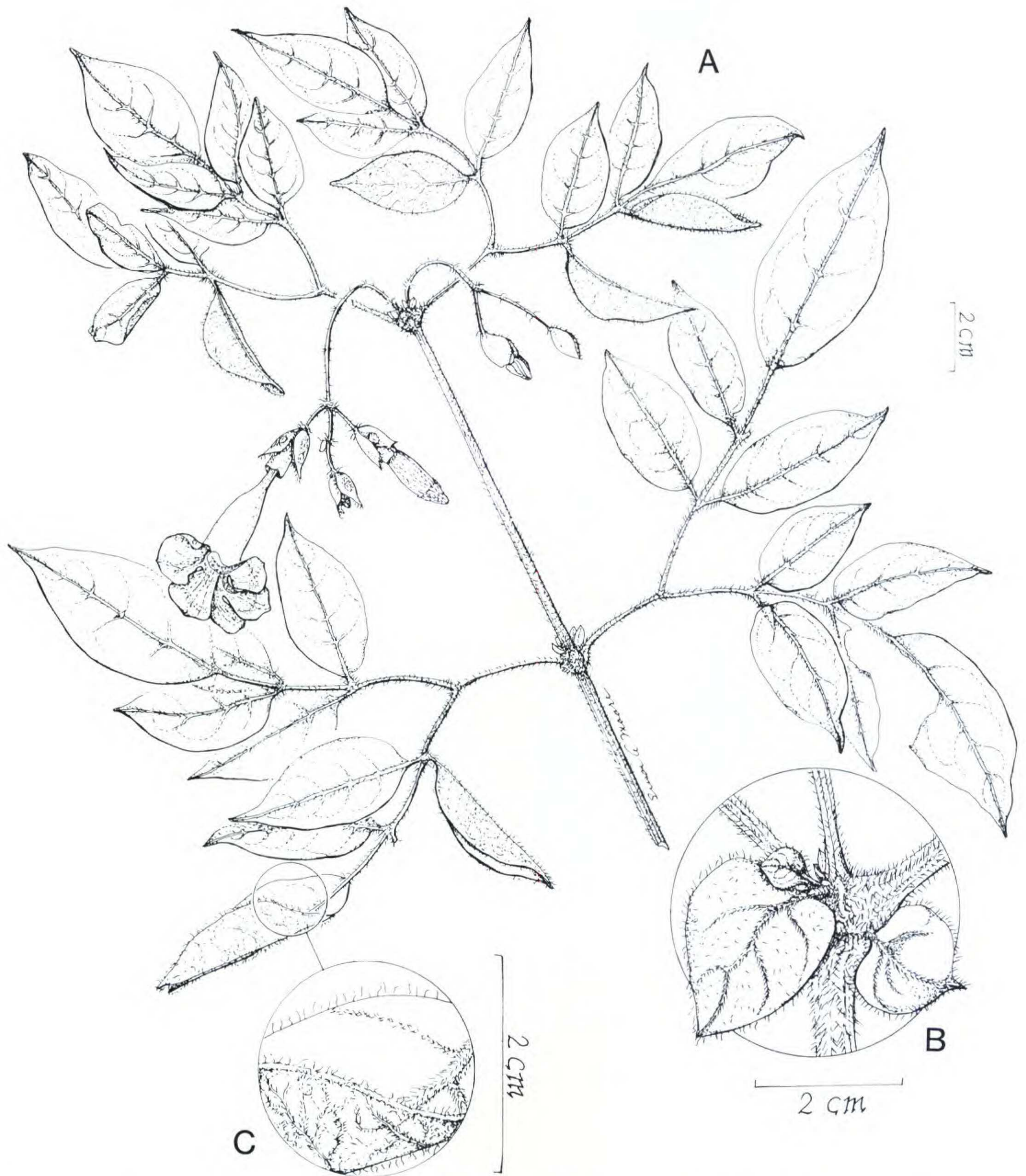


Figure 3. *Memora velutina* A. H. Gentry ex Hauk. —A. Leaves and inflorescences. —B. Pseudostipules. —C. Leaflet pubescence, adaxial and abaxial views. (From Prance et al. P25891, MO, NY, US.)

apically acute to slightly acuminate, basally obtuse to rounded, the venation brochidodromous with 4–6 principal vein pairs, marginally plane to slightly revolute; joints of the compound leaf conspicuously enlarged. *Inflorescences* elongate, axillary racemes to 10 cm long, unbranched, few- to several-flowered; rachis and peduncles terete, pilose, and bracteate, the bracts linear-triangular, 0.5–1.0 × 0.5 mm, caducous, eglandular, pilose; pedicels 2–4 mm

long, glabrate to sparsely pilose; bracteoles ovate-elliptic and cupular, 10–13 × 5–7 mm, persistent, glandular, glabrate to sparsely pilose with pilose margins, extending beyond the tip of the calyx. *Flowers* ovoid in bud; calyx campanulate, 10–12 × 5–6 mm, eglandular, ecostate, the outer and inner calyx surfaces glabrate, the margin intact and flared, apically truncate except for 5 minute teeth; corolla zygomorphic, tubular-funnelform, yellow,

exserted 35–40 mm beyond the level of the calyx lip (45 mm total length), 2–3 mm wide at the calyx mouth, with an inner ring of pilose pubescence 7–10 mm beyond the corolla tube base; corolla lobes 5 (2 upper and 3 lower), 15 × 12–15 mm, short-orbicular, the inner and outer surfaces glandular-lepidote, no glandular fields present at the base of each lobe; fertile stamens didynamous, ca. 15 or 20 mm long, inserted near the level of the calyx tip, the single staminode inserted near the level of the fertile stamens; fertile anthers with two spreading thecae, glabrous, included; disc 1 mm tall; ovary 4–5 mm long, cylindrical, lepidote; style ca. 25 mm long; stigma bipartite and included. *Fruit* unknown.

Distribution. The type and only known collection was made on a roadside along the Transamazonian highway, 188 km west of Altamira. No information is available on elevation or habitat.

Phenology. The type collection was in flower in November. No collections of fruit are known at this time.

Memora velutina (Fig. 3) has several unique or unusual characters, the most conspicuous of which is its pilose pubescence. The density of trichomes seen in *M. velutina* is unusual in *Memora*, and the pilose pubescence is unlike the pubescence found on other *Memora* species. The combination of a campanulate calyx and bracteoles exceeding the calyx is found only in *M. velutina* and *M. longilinea* A. Sampiao, but the species are not similar otherwise. *Memora mollis* and *M. racemosa* have campanulate calyces, but both have small bracteoles. *Memora velutina* is also distinctive because of its few-flowered, somewhat delicate inflorescences. The large, foliaceous, cordate-orbicular pseudostip-

ules contrast with the elliptic leaflet shape. The only other *Memora* species with pseudostipules of this shape is *M. adenophora* Sandwith. Affinities to existing *Memora* species are not clear, but probably lie with *M. racemosa*, *M. longilinea*, and *M. mollis*. Investigations of fruit and seed type, wood anatomy, and pollen morphology are needed to further assess the taxonomic affinities of this species.

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